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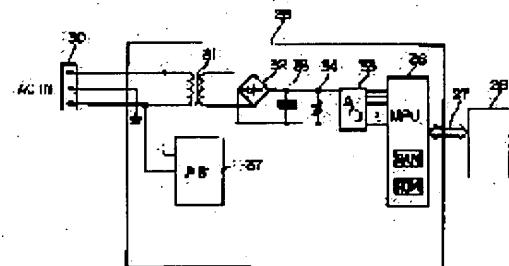
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(54) PICTURE RECORDER

(57) Abstract:

PURPOSE: To automatically implement proper initial setting to each district or each country by implementing the initial setting based on information of a detection means detecting a power supply voltage.

CONSTITUTION: When power is applied to a laser beam printer, an MPU 36 detects the power supply voltage from digital data from an A/D converter 35 and when the detected value is less than 110V, it is discriminated the district to be a power supply voltage 100V, that is, Japan and the initial setting of paper size is set to be size A4. When the detected voltage is in a range of 110-140V, it is discriminated that the power supply voltage is 120V, that is, the USA, and the initial setting of paper size is set to a letter size. Furthermore, when the voltage is other than the power supply voltages (more than 140V), it is discriminated that the power supply voltage is within a range of 200-220V, that is, Europe, the initial setting of paper size is set to be size A4. In this case, the recorder allows an external device to select the initial setting corresponding to the power supply voltage by transferring each detection



information or identification information to the external device.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Industrial Application] This invention relates to the image recording equipment which performs image recording in the record paper based on the image information from an external device.

[0002]

[Description of the Prior Art] Conventionally, in this kind of image recording equipment, the printer which performs image recording on fixed form papers, such as A4 size paper and letter size paper, is offered.

[0003] Moreover, in many cases, in such a printer, a user can set paper sizing, the font used, etc. now as arbitration. It is common to set it as the mode which is a manufacturer and is expected that most users use it about initial setting of a power up on the other hand.

[0004] Moreover, AC source power supply is being used for various kinds of devices containing such a printer.

[0005]

[Problem(s) to be Solved by the Invention] However, the mode in above-mentioned initial setting expected to use it most mostly may change with the areas and countries where the printer is used. For example, in a setup of paper size, many A4 sizes are used in the Europe area, and many letter size is used in the U.S.

[0006] For this reason, since it corresponds to the difference for an every place region or every country conventionally, it is the destination of a printer, and it is necessary to make it make a user sort out initialization information, and there is a fault that an activity is complicated. Moreover, in order to make a user sort out initialization information and to hold this sorting information, the nonvolatile memory for it is needed and there is also a problem of becoming that part cost rise.

[0007] Moreover, in a system which performs the above initial setting from an external instrument, if the external instrument which has different software for every area or country was not shipped, there was a fault that suitable initial setting could not be performed.

[0008] This invention aims at offering the image recording equipment which can perform optimal initial setting automatically for an every place region or every country.

[0009]

[Means for Solving the Problem] This invention performs optimal initial setting automatically based on the identification information by the discernment means of the classification of a supply voltage unit established for an every place region or every country based on the detection information by the detection means of different supply voltage for an every place region or every country.

[0010]

[Example] Drawing 1 is the sectional view showing the structure of the laser beam printer by the 1st example of this invention.

[0011] In drawing, the body 1 of a printer has the cassette 2 which holds the recording paper S, and the feed roller 5 grade which lets out the recording paper S is prepared from the cassette paper existence

sensor 3 which detects the existence of the recording paper S of this cassette 2, the cassette size sensor 4 which consists of two or more microswitches which detect the size of the recording paper S of a cassette 2, and the cassette 2.

[0012] and the resist roller pair which carries out synchronous conveyance of the detail paper S on the lower stream of a river of the feed roller 5 -- 6 is arranged. moreover, a resist roller pair -- the image formation section 8 which forms a toner image on the recording paper S based on the laser beam from the laser scanner section 7 is arranged in the lower stream of a river of 6.

[0013] Furthermore, the fixing assembly 9 which carries out heat fixing of the toner image formed on the recording paper S is arranged in the lower stream of a river of this image formation section 8, and the loading tray 12 loading the delivery sensor 10 which detects the paper conveyance condition of a delivery unit, the delivery roller 11 which abolishes the recording paper S, and the recording paper S which record completed is arranged in the lower stream of a river of this fixing assembly 9.

[0014] Moreover, the laser scanner section 7 is constituted by the clinch mirror 16 grade with the polygon motor 14 for scanning on the photoconductor drum 17 which modulates and mentions a laser beam later based on the laser unit 13 which outputs a laser beam, and the picture signal sent out from an external device 28, and the image formation lens group 15.

[0015] And the image formation section 8 consists of the photoconductor drum 17 required for a well-known electrophotography process, the pre-exposure lamp 18, the primary electrification machine 19, a development counter 20, an imprint electrification machine 21, and cleaner 22 grade that has cleaner blade 22a.

[0016] moreover, the Maine motor 23 -- the feed roller 5 -- receiving -- the feed roller clutch 24 -- minding -- driving force -- giving -- a resist roller pair -- to 6, driving force is given through the resist roller clutch 25, and driving force is also given to each unit of the image formation section 8 which contains a photoconductor drum 17 further, the fixing assembly 9, and the delivery roller 11.

[0017] Moreover, the printer control unit 26 controls the body 1 of a printer, and is connected to the personal computer 28 through the general interface 27. Moreover, this printer control device 26 is connected also with the control panel 29 which has LCD, LED, a key switch, etc.

[0018] In the above-mentioned configuration, if a personal computer 28 sends out a print instruction to the printer control unit 26 through a general interface 27, the printer control unit 26 drives the feed roller 5, it will let out the recording paper S from a cassette 2, will carry out sequential conveyance, and will print according to the record process using an electrophotography process.

[0019] Moreover, the printer control device 26 is performing processing which changes the image information sent out by predetermined code data into the picture signal for emitting light in laser 13 from a personal computer 28 at this time.

[0020] Moreover, a user performs a setup of the paper size to print from a control panel 29. Here, a setup of the paper size of a power up detects supply voltage, and is performed from the information.

[0021] Drawing 2 is the circuit diagram showing the configuration which detects the power-source information in the printer control unit 26.

[0022] illustration -- like -- a printer -- a control unit -- 26 -- a commercial -- AC -- a power receptacle -- connecting -- having -- a power source -- a connector -- 30 -- a direct current -- an insulation -- ** -- a transformer -- 31 -- rectification -- ** -- a diode bridge -- 32 -- a smoothing capacitor -- 33 -- load resistance -- 34 -- an A/D converter -- 35 -- a printer -- a control unit -- 26 -- the whole -- control -- carrying out -- MPU -- 36 -- the above -- a commercial -- an AC power -- from -- a DC power supply -- creating -- a printer -- a control unit -- 26 -- each part -- supplying -- switching power supply -- a circuit -- (PS) -- 37 -- having . Moreover, MPU36 is connected with the external device 28 through the interface 27.

[0023] In such a configuration, if the power source was switched on, after the pressure of AC input voltage will be lowered by the transformer 31 and it will be rectified in a diode bridge 32, smooth is carried out with a smoothing capacitor 33. And the both-ends electrical potential difference of load resistance 34 is inputted into A/D converter 35, and the digital data changed by this A/D converter 35 is inputted into MPU36. Thereby, MPU36 can detect commercial AC supply voltage as digital data.

[0024] Drawing 3 is a flow chart which shows the control action of MPU36 of the power up in this example.

[0025] When a power source is supplied to a laser beam printer, MPU36 detects supply voltage, if the detection value is less than [110V] (S1), will judge as supply voltage 100V area, i.e., Japan, and will make initial setting of paper size A4 size (S3).

[0026] Moreover, if a detection value is the range which is supply voltage 110V-140V (S2), it will judge as supply voltage 120V area, i.e., the U.S., and let initial setting of paper size be letter size (S4).

Furthermore, if it is except the above-mentioned supply voltage (more than 140V), it will judge as supply voltage 220V - 240V area, i.e., Europe, and let initial setting of paper size be A4 size (S3).

[0027] Thus, initial setting of paper size according to the area can be performed to a power up.

[0028] Next, the 2nd example of this invention is explained. In addition, since the fundamental structure of the printer in this example is common, it attaches and explains the same sign to be what is shown in the 1st example (drawing 1) of the above.

[0029] Drawing 4 is the circuit diagram showing the configuration which detects the power-source information in the printer control unit 26 of this 2nd example. In addition, the same sign is attached and explained about the same configuration as the 1st example (drawing 2).

[0030] In this 2nd example, jumper wire JP1 and JP2 is formed, respectively between the pull-up resistors 39 and 40 and grounds which have mutually different resistance, the middle points P1 and P2 of each resistance 39 and 40 and jumper wire JP1 and JP2 are connected to MPU36, and the value of the supply voltage inputted into the switching power supply circuit 38 based on this value of P1 and P2 is detected.

[0031] When shipping a printer to the area where supply voltage differs generally, the unit of a power circuit suitable for the supply voltage is prepared. Therefore, by changing short-circuit of the jumper wire JP1 and JP2 mentioned above, and the combination of opening for every unit of this, the combination of "H" of P1 and P2 and "L" is determined, and the supply voltage which corresponds with this value of P1 and P2 based on the judgment table shown in drawing 5 beforehand set up in memory can be detected. In addition, short-circuit and opening of jumper wire JP1 and JP2 may be set up at the time of unit manufacture of a power circuit, and may be set up at the time of shipment of a printer. Moreover, when it is the area where the paper sizes to be used differ, you may make it change short-circuit of jumper wire JP1 and JP2, and the combination of opening about a common power supply unit, although supply voltage is common.

[0032] Moreover, since it is the same as that of the 1st example (drawing 3) of the above, the approach of initial setting of paper size to the detected supply voltage is omitted.

[0033] Next, the 3rd example of this invention is explained. In addition, since the structure of the printer in this example is common, it attaches and explains the same sign to be what is shown in the 1st example (drawing 1 , drawing 2) of the above. Moreover, the external device 28 in this 3rd example has the function to choose and perform optimal initial setting, based on the supply voltage information status mentioned later.

[0034] Drawing 6 is the block diagram showing the configuration of the interface 27 in this 3rd example.

[0035] In drawing, SBSY is a status valid signal and is sent out to an external device 28 from the printer control unit 26. Moreover, CBSY is a command valid signal and is sent out to the printer control unit 26 from an external device 28.

[0036] It is the status/command signal, SC is sent out to an external device 28 from the printer control unit 26 as status data in which the internal state of a printer is shown when the status valid signal SBSY is TRUE, and when the command valid signal CBSY is TRUE, it is sent out to the printer control unit 26 from an external device 28 as command data in which the instruction to a printer is shown from an external device 28.

[0037] CLK is the synchronous clock of the status / command signal SC, and is sent out to the printer control unit 26 from an external device 28. The printer control unit 26 returns the one status corresponding to the command to one command from an external device 28.

[0038] In addition, each signal of the above-mentioned status valid signal SBSY, the command valid signal CBSY, the status / command signal SC, and a synchronous clock CLK is a signal used for the serial communication of a handshake format.

[0039] RDY is a ready signal, when it is in the condition which can print the printer control unit 26, serves as TRUE and is sent out to an external device 28 from the printer control unit 26. When an external device 28 directs print initiation, PRINT is a print signal used as TRUE, and is sent out to the printer control unit 26 from an external device 28.

[0040] Furthermore, VSREQ is a vertical-synchronization demand signal with which the printer control unit 26 requires the output of Vertical Synchronizing signal VSYNC from an external device 28. Above-mentioned Vertical Synchronizing signal VSYNC is a signal which takes the synchronization of the perpendicular direction (the direction of vertical scanning / the paper conveyance direction) of the image output VDO sent out from an external device 28 to the printer control unit 26, and is sent out from an external device 28 to the printer control unit 26.

[0041] HSYNC is a signal which takes the synchronization of the horizontal direction (a main scanning direction/laser) of the image output VDO, and is sent out to an external device 28 from the printer control unit 26.

[0042] Next, the detail of the actuation in this example equipment is explained based on the timing chart of drawing 7 - drawing 9.

[0043] First, the printer control unit 26 will start the drive of the Maine motor 23 and the polygon motor 14, if the print signal PRINT is set to TRUE.

[0044] A drive of the Maine motor 23 rotates a photoconductor drum 17, a fixing roller (inside of a fixing assembly 9), and the delivery roller 11. At this time, the high-pressure drive of the momentary electrification machine 19, a developing machine 20, and the imprint electrification machine 21 is also performed.

[0045] t1 from which, as for the printer control unit 26, rotation of the polygon motor 14 will be in a steady state after a second (refer to drawing 8) -- the feed clutch 24 -- turning on -- the feed roller 5 -- driving -- the detail paper S -- a resist roller pair -- paper is fed towards 6.

[0046] and the printer control device 26 -- the tip of the detail paper S -- a resist roller pair -- while sending out the vertical-synchronization demand signal VSREQ to an external device 28 to the timing (it is t2 after driving the feed roller 5 after a second) which reaches 6, the feed roller clutch 24 is turned off and the drive of the feed roller 5 is stopped.

[0047] It checks that the vertical-synchronization demand signal VSREQ is TRUE, Vertical Synchronizing signal VSYNC is set to TRUE, it synchronizes with this, and an external device 28 is tV, if the expansion to the dot image of image information is finished and preparation of the output of a picture signal VDO is completed. The output of the picture signal VDO for 1 page is started in a second.

[0048] the printer control device 26 -- the standup of Vertical Synchronizing signal VSYNC to t3 after a second -- the resist roller clutch 25 -- turning on -- a resist roller pair -- 6 is driven. the drive of resist roller pair 6 -- the back end of the detail paper S -- a resist roller pair -- t4 until it passes 6 It carries out during a second.

[0049] Moreover, the printer control unit 26 modulates the laser beam which emits light from the laser unit 13 based on a picture signal VDO in the meantime while sending out Horizontal Synchronizing signal HSYNC to an external device 28 to the predetermined timing which synchronized with the laser scan.

[0050] An external device 28 outputs the picture signal VDO for one scan synchronizing with the standup of Horizontal Synchronizing signal HSYNC, as shown in drawing 9 .

[0051] Moreover, it is t5 when printing the following page. The print signal PRINT is again set to TRUE in a second. Then, the same actuation as the 1st page is performed.

[0052] actuation of such the printer control device 26 and an external device 28 -- the detail paper S -- the feed roller 5 and a resist roller pair -- sequential conveyance is carried out to 6, the image formation section 8, a fixing assembly 9, and the delivery roller 11, and image recording is made.

[0053] In this 3rd example, if an external device 28 performs an initialization action and the power source was switched on, after the pressure of AC input voltage will be lowered by the transformer 31 and it will be rectified in a diode bridge 32, smooth is carried out with a smoothing capacitor 33. And the both-ends electrical potential difference of load resistance 34 is inputted into A/D converter 35, and the digital data changed by this A/D converter 35 is inputted into MPU36. Thereby, MPU36 can detect commercial AC supply voltage as digital data, and stores it in RAM by making this data into supply voltage information.

[0054] On the other hand, an external device 28 sends out the command which requires the supply voltage information stored in the printer control unit 26 in RAM of MPU36 through the interface 27 a power up or if needed. On the other hand, the printer control unit 26 returns the supply voltage information status based on the supply voltage information memorized by RAM of MPU36. In addition, this exchange is performed by the status valid signal SBSY mentioned above, the command valid signal CBSY, the status / command signal SC, and the serial communication using each signal of a synchronous clock CLK.

[0055] In addition, since it is the same as that of the 1st example (drawing 3) of the above, the approach of initial setting of paper size to the detected supply voltage is omitted.

[0056] Next, the 4th example of this invention is explained. In addition, since the fundamental structure of the printer in this example is common, it attaches and explains the same sign to be what is shown in the 1st example (drawing 1) of the above.

[0057] Drawing 10 is the block diagram showing the interface 27 in the printer control device 26 of this 4th example, and drawing 11 is the circuit diagram showing the configuration which detects the power-source information in the printer control device 26 of this 4th example. In addition, the same sign is attached and explained about the same thing as the configuration of drawing 6 in the 3rd example, and the configuration of drawing 4 in the 2nd example of the above.

[0058] In this 4th example, the signals P1 and P2 explained in the 2nd example of the above are transmitted to an external device 28 through an interface 27, and an external device 28 performs an initialization action based on this data.

[0059] In addition, since it is the same as that of the 1st example (drawing 3) of the above, the approach of initial setting of paper size to the detected supply voltage is omitted.

[0060]

[Effect of the Invention] As explained above, according to this invention, based on the detection information by the detection means of different supply voltage for an every place region or every country, it is effective in the ability to perform optimal initial setting automatically for an every place region or every country based on the identification information by the discernment means of the classification of a supply voltage unit established for an every place region or every country.

[0061] Moreover, according to this invention, by transmitting the above-mentioned detection information or identification information to an external device, initial setting corresponding to supply voltage can be made to choose by the external device side, and it is effective in the ability to perform optimal initial setting automatically from an external device for an every place region or every country.

[Translation done.]

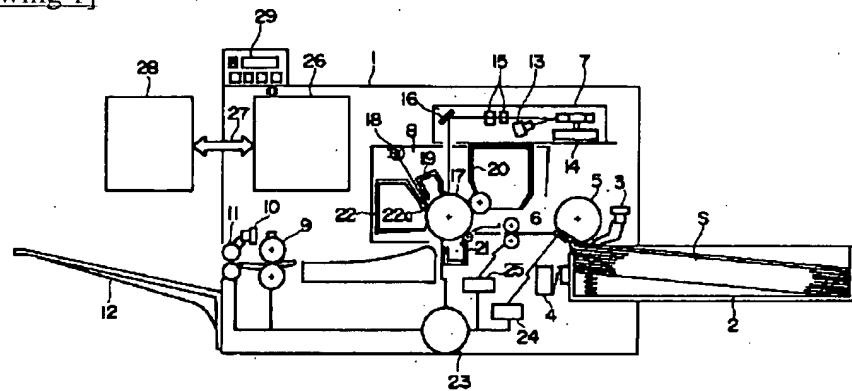
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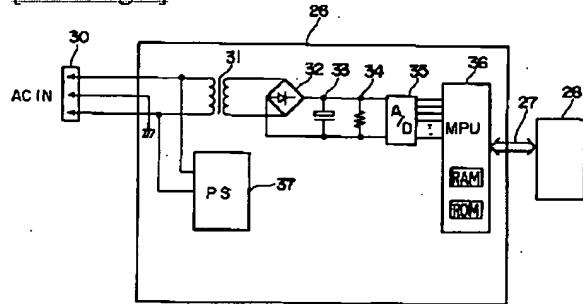
DRAWINGS

[Drawing 1]



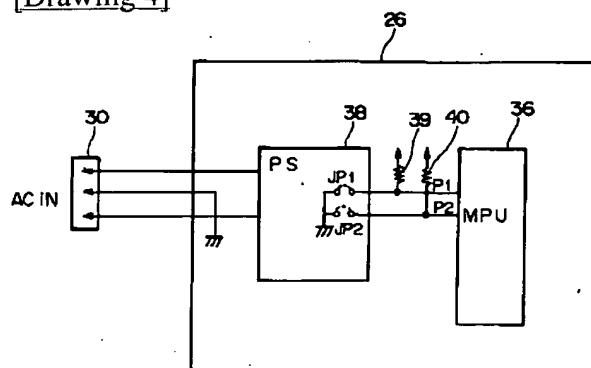
1: 本体
 9: 定着器
 26: プリンタ制御装置
 28: 外部装置

[Drawing 2]



K2147

[Drawing 4]

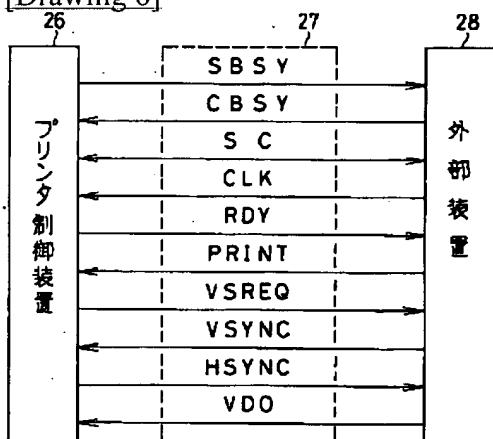


[Drawing 5]

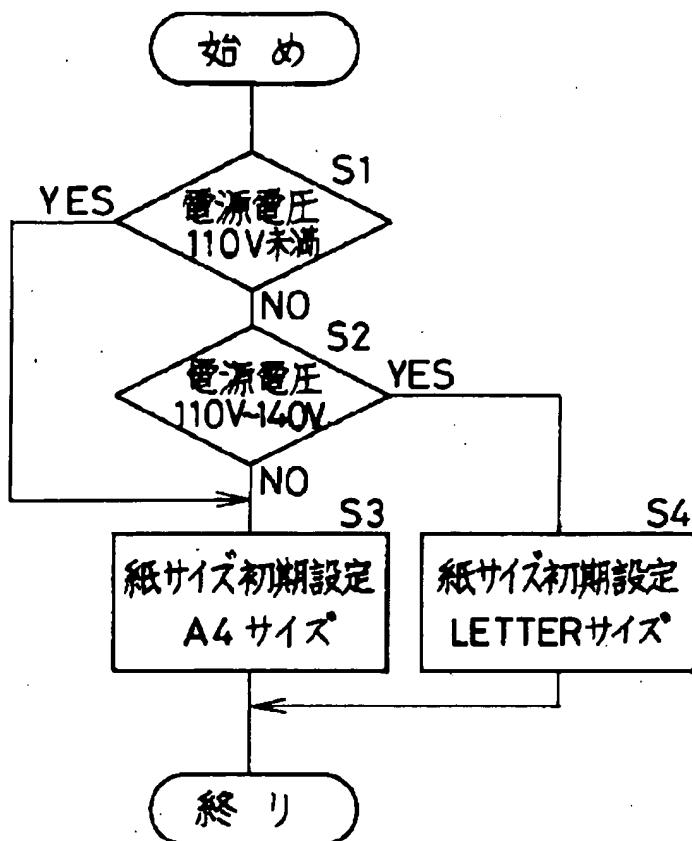
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P1	P2		
L	L	該当なし	—
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H	L	120V 系	LETTER サイズ
H	H	220V 系	A4 サイズ

K2147

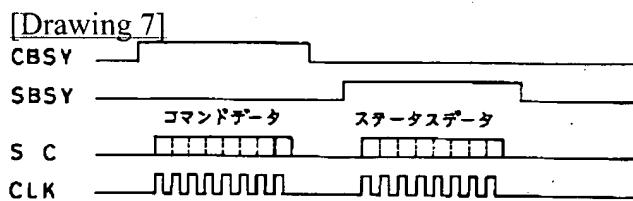
[Drawing 6]



[Drawing 3]

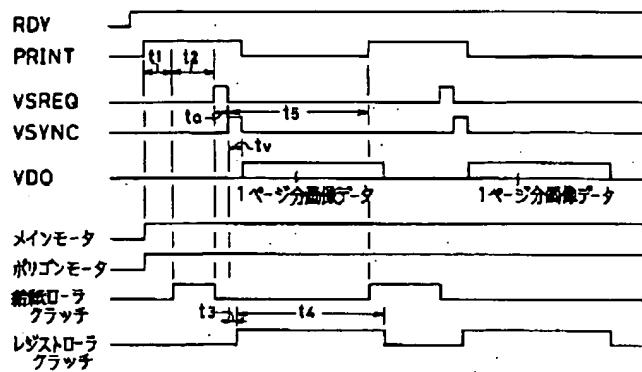


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K2147

[Drawing 8]

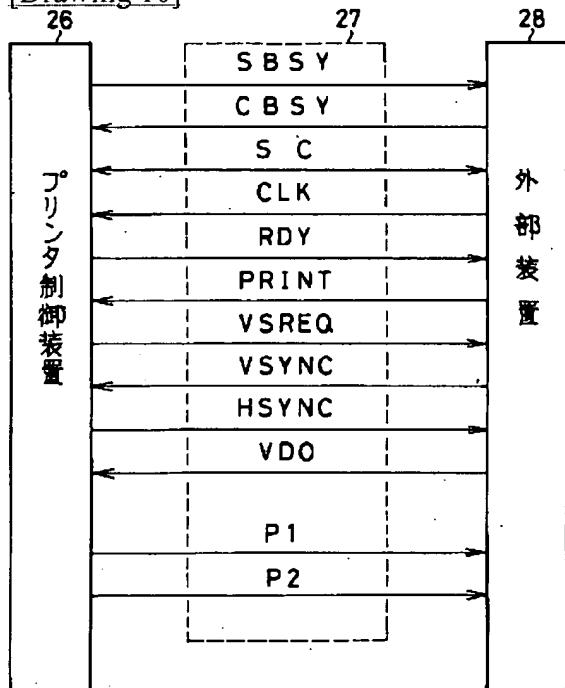


[Drawing 9]



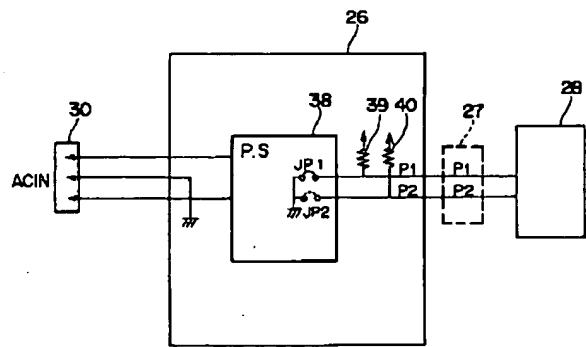
K2147

[Drawing 10]



K2147

[Drawing 11]



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[Translation done.]